

THE GENUS *PHLOEOMYZUS* WITH THE DESCRIPTION OF
P. DEARBORNI N. SP. FROM *POPULUS TREMULOIDES* MICHX.¹
(HOMOPTERA: APHIDIDAE)

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ABSTRACT—The genus *Phloeomyzus* has *Populus* spp. as its host and is known world-wide. A key is given to apterous viviparae, alate oviparae, and alate males of the 2 known species. Alate oviparae, apterous viviparae, and alate males of *Phloeomyzus dearborni* are described.

The genus *Phloeomyzus* is world-wide, having been reported from Africa, Central Asia, England, Europe, North America, Russia, and South America. In Europe, especially in Italy, it is often quite injurious to *Populus* spp. The only published record I have been able to find of *Phloeomyzus* in North America is one by Boerner (1926: 238) where he lists *Phloeomyzus passerinii* Signoret. Louise M. Russell was unable to find specimens of *Phloeomyzus* from North America in the collection of the United States National Museum of Natural History. Ellen MacGillivray, Fredericton, Canada, loaned me specimens which had been collected in Canada.

Signoret (1875: CCII) described *Schizoneura passerinii* from poplar. Lichtenstein (1886: 37) placed *passerinii* in a new genus, *Loewia*. Horváth (1896: 5) called attention to the fact that *Loewia* had been used as a generic name in Diptera and proposed the generic name *Phloeomyzus* for *passerinii* Signoret.

Three additional species have been placed in the genus *Phloeomyzus*. Hille Ris Lambers (1931: 29) described *Phloeomyzus redelei* from *Populus nigra* L. Boerner and Schilder (1932: 634) listed *Phloeomyzus dubius* Boerner from *Populus nigra*. (I have been unable to locate an earlier reference to *P. dubius*, therefore, this may be a *nomen nudum*.) Roberti (1939: 140) listed *P. dubius* as a synonym of *P. passerinii*. Boerner (1952: 182) listed *P. dubius* as a synonym of *redelei*.

Doom and Hille Ris Lambers (1962) stated "There are two species of *Phloeomyzus* which morphologically are as yet indistinguishable, namely *P. passerinii* (Signoret) and *P. redelei* H.R.L., the former on white poplar (*Populus alba* L.) and the latter on black poplar (*P. nigra* L.)." Signoret (1875) did not indicate the species of poplar from which he described *P. passerinii*. Hill Ris Lambers (1972)

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stated, "I do not consider *P. redelei* H.R.L. different from *P. passerinii*. I changed my opinion after I learned that the species attacks not only various hybrids of *Populus nigra*, but also *P. laurifolia* and *P. ciliata*."

Shinji (1924: 343) described *Phloeomyzus konarae* from *Quercus glandulifera* Bl. Takahashi (1960: 10) erected a new genus *Diphyllaphis* with *Phloeomyzus konarae* Shinji as the type-species.

The genus *Phloeomyzus* feeds in the cracks and crevices on the trunk and larger limbs of *Populus* spp. None of the morphs have secondary rhinaria. Males and oviparous females have wings and functional mouthparts. Each oviparous female deposits 2 eggs.

KEYS TO *Phloeomyzus*

Apterous viviparae^{2 4}

- 1. Rostral segments IV + V, 0.19–0.24 *P. dearborni* Smith
- Rostral segments IV + V, 0.12–0.16 *P. passerinii* (Signoret)

Alate oviparae

- 1. R IV + V, 0.18–0.20 *P. dearborni* Smith
- R IV + V, 0.14–0.15 *P. passerinii* (Signoret)

Alate males

- 1. R IV + V, 0.15–0.17; forewings small, 0.8, distinctly shorter than body, media and cubitus absent, not similar to wings of alate oviparae (fig. 1, 2) *P. dearborni* Smith
- R IV + V, 0.11–0.13; forewings larger, 1.4, longer than body, media and cubitus distinct, similar to wings of alate oviparae (fig. 3, 4) *P. passerinii* (Signoret)

Phloeomyzus dearborni Smith, new species³

fig. 1, 2

Alate Oviparae (fig. 1): Head dark, without wax plates. Eyes compound. Antennae dark without secondary rhinaria. Setae small, sparse, inconspicuous.

Thorax dark, without wax plates. Rostrum attaining middle of abdomen. Rostral segment IV + V usually with 2 to 4 inconspicuous accessory setae. Wing veins with fuscous borders, venation variable, radius present or absent,

² Hille Ris Lambers (1972) reported "Your specimens are larger than European apterae in my collection. But the Pakistan material from *Populus* has a wider variation in size and the two largest specimens are nearly as large as your apterae. One of these large Pakistani apterae has a last rostral segment of 0.20."

³ Named in honor of R. G. Dearborn, Survey Entomologist, Augusta, Maine, who first called this species to my attention and furnished specimens and notes for use in preparation of this paper.

⁴ All measurements are in millimeters.



Fig. 1. *Phlocomyzus dearborni*, alate ovipara, 42 \times . Monroe, Maine, September 14, 1970.

media usually branched once, but sometimes branched twice. Hind wing usually with faint media and cubitus. Legs dusky, uniform in color. Tarsal chaetotaxy usually 3-3-3. Setae on tarsomere I usually 2 long plus center 1 which is shorter and somewhat peglike.

Abdomen pale. Siphunculi porelike, sometimes slightly raised. Large wax plates on each side of the abdomen on abdominal segment VII. Cauda semilunar and bearing about 10 setae.

Measurements¹ of holotype. Body 1.95. Width of head 0.37. Length of antennal segment II, 0.07; III, 0.16; IV, 0.095; V, 0.14; VI, 0.14 + 0.02. Rostral segment IV + V, 0.20. Hind tibia 0.54. Hind tarsomere II, 0.13.

Principal diagnostic characters: antennae without secondary rhinaria; Rostral segment IV + V, 0.18-0.20 (which is 9 to 10 times length of processus terminalis).

Apterous Viviparae: Head pale except areas around eyes which consist of 3 to 5 ommatidia. Antennae dark. Setae sparse, inconspicuous. Rostrum attaining middle of abdomen. Rostral segment IV + V with 2 inconspicuous, accessory setae.

Thorax pale. Legs uniformly dark. Tarsal chaetotaxy 3-3-3.

Abdomen pale with large wax plates on each side of the abdomen on segment VII. Siphunculi small, porelike. Cauda semilunar with about 8 setae.

Measurements of 1 specimen. Body 2.15. Width of head 0.47. Antennal segment II, 0.07; III, 0.10; IV, 0.075; V, 0.11; VI, 0.12 + 0.02. R IV + V,



Fig. 2. *Phloeomyzus dearborni*, alate male, 42 \times . Monroe, Maine, August 23, 1971.

0.20. Hind tibia 0.43. Hind tarsomere II, 0.12. Setae on tarsomere I all relatively short and about the same length.

Principal diagnostic character: Long R IV + V, 0.19 to 0.24 (which is 9 to 10 times length of processus terminalis).

Alate Males (fig. 2): Head dark. Eyes compound. Antennae dark, 6-segmented, with small inconspicuous scattered setae, without secondary rhinaria.

Thorax dark, without wax plates. Wings small, without veins or with very faint indication of partial media or cubitus. Legs uniformly dark. Tarsal chaetotaxy 3-3-3, all setae small and approximately same length. Rostrum nearly attaining siphunculi. Rostral segment IV + V with 2 accessory setae.

Abdomen pale. Siphunculi conspicuous, slightly raised pores. Wax plates not discernible on available specimens. Cauda semilunar with about 4 setae.

Principal diagnostic characters. Antennae without secondary rhinaria. Wings without distinct media and cubitus.

Measurements of 1 specimen. Body 1.3. Width of head 0.35. Antennal segment II, 0.06; III, 0.12; IV, 0.10; V, 0.10; VI, 0.10 + 0.015. Rostral segment IV + V, 0.16. Hind tibia 0.44. Hind tarsomere II, 0.13. Forewing 0.8.

Types: Holotype in United States National Museum and bearing the following data. "Holotype, Monroe, Maine, 9-14-70, R. G. Dearborn, 70-B85 *Populus tremuloides*. *Phloeomyzus dearborni* Smith, Det. C. F. Smith." Paratypes in the collection of the U. S. National



Fig. 3. *Phloeomyzus passerinii*, alate ovipara, 42 \times . Casale, Italy, September 1961.

Museum, British Museum (N. H.), Maine Agricultural Experiment Station, North Carolina State University at Raleigh, D. Hille Ris Lambers, Bennekom, R. G. Dearborn, and in my collection.

Type Locality: Monroe, Maine.

Collections: Collections (type series) on *Populus tremuloides* at Monroe, Maine, U. S. A., September 14, 1970 and August 23, 1971 by R. G. Dearborn; on *Populus* sp., Canada, July 17, 1950 by N. R. Brown.

Biology: Aphids of the genus *Phloeomyzus* live in the cracks and crevices of bark and cancerous growths on the trunks and limbs of *Populus* spp. Limbs and/or trees may die following a heavy infestation.

Doom and Hille Ris Lambers (1962) indicated eggs of *Phloeomyzus redelei* H.R.L. were deposited on *Populus nigra*, but they did not find the stem mothers or the males.

Theobald (1929) recognized the alate ovipara of *P. passerinii* as having "two ova in each", as is the case with *redelei* H.R.L. (Doom and Hille Ris Lambers 1962: 202). Theobald (1929: 270) also indicated the male was alate and had wing venation similar to the alate ovipara. This was verified by Victor Eastop of the British Mu-



Fig. 4. *Phloeomyzus passerinii*, alate male, 42 \times . Casale, Italy, August 25, 1962.

seum (N.H.) who examined the specimens studied by Theobald. Also, I have males of *P. passerinii* from Italy and the venation is similar to the alate oviparae.

From collection records and notes by R. G. Dearborn, it appears that *P. dearborni* is confined to *Populus tremuloides*. Collections were made during 1970 and 1971, and the morphs collected were apterous viviparae, nymphs, alate oviparae and alate males. Mr. Dearborn sent me the following observations: "At your suggestion we just recently revisited the area infested by *Phloeomyzus* and were able to collect about 30 winged forms. We also noted what appear to be syrphid fly larvae feeding on the aphids in the wool. The infestation is still very small (only 15-20 trees affected) but seems to have enlarged by about 5 trees since this spring. At the time we checked it we noticed that trees infested in 1970 seem to have died and others which are now heavily infested are dying back from the top. This seems rather quick for infested trees to succumb but this is the situation as we see it . . ."

"The infestation is a very interesting one. Besides being very localized (We thoroughly checked trees in the surrounding area and

found no aphids.), it is remote and not in a prominent topographical location. The trees set on a slope about 30-50 feet back from the road behind a screen of conifers and other hardwood trees and saplings. The area involved contains only a native mixture of species of trees which are being managed for pulp and timber production and no plantations occur within several miles of the stand as far as we know. The infested trees are mostly small (est. 3-8" DBH) and the aphids are concentrated in the lower $\frac{1}{2}$ - $\frac{2}{3}$ of the bole. Although the aphids seem to favor the South side of the tree, they eventually cover all sides in patches."

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